

## CLAIMS

I claim:

5 Claim 1. A device for generating a plurality of electron beams comprising:

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- a) a source of radiation; and,
  - b) a modulator having a position so as to modulate said radiation emanating from said source of radiation; and,
  - 10 c) a photocathode having a position so as to receive said modulated radiation wherein said photocathode produces a plurality of electron beams under impact by said modulated radiation.

15 Claim 2. A device as in claim 1 wherein said radiation is uv radiation.

Claim 3. A device as in claim 2 wherein said source of radiation is a mercury arc lamp.

Claim 4. A device as in claim 3 wherein said photocathode is cesium telluride.

20 Claim 5. A device as in claim 1 wherein said modulator is a spatial light modulator.

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Claim 6. A device as in claim 5 wherein said spatial light modulator is a micromirror array.

25 Claim 7. An electron beam lithography system comprising:

- a) a source of radiation; and,
- b) a modulator having a position so as to modulate said radiation emanating from said source of radiation; and,
- c) a photocathode having a position so as to receive said modulated radiation wherein said photocathode produces a plurality of electron beams under impact by said modulated radiation; and,
- 30 radiation; and,

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d) an electron beam optical column having a position so as to receive said plurality of electron beams and to direct said plurality of electron beams onto a target.

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Claim 8. A system as in claim 7 wherein said radiation is uv radiation.

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Claim 9. A system as in claim 8 wherein said source of radiation is a mercury arc lamp.

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Claim 10. A system as in claim 9 wherein said photocathode is cesium telluride.

10 Claim 11. A system as in claim 7 wherein said modulator is a spatial light modulator.

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Claim 12. A system as in claim 11 wherein said spatial light modulator is a micromirror array.

15 Claim 13. A method of producing a plurality of electron beams comprising:  
a) directing radiation onto a modulator, thereby modulating said radiation; and  
b) directing said modulated radiation onto a photocathode thereby producing a plurality of electron beams.

20 Claim 14. A method as in claim 13 wherein said radiation is uv radiation.

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Claim 15. A method as in claim 14 wherein said source of radiation is a mercury arc lamp.

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Claim 16. A method as in claim 15 wherein said photocathode is cesium telluride.

25 Claim 17. A method as in claim 13 wherein said modulator is a spatial light modulator.

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Claim 18. A method as in claim 17 wherein said spatial light modulator is a micromirror array.

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Claim 19. A method of performing lithography with multiple beams of electrons comprising:

- a) directing radiation onto a modulator, thereby modulating said radiation; and,
- b) directing said modulated radiation onto a photocathode thereby producing a

plurality of electron beams and,

c) directing said plurality of electron beams onto the acceptance region of an electron beam optical column, producing thereby a plurality of electron beams impacting a target located at the target end of said electron beam optical column.

Claim 20. A method as in claim 19 wherein said radiation is uv radiation.

Claim 21. A method as in claim 20 wherein said source of radiation is a mercury arc lamp.

Claim 22. A method as in claim 21 wherein said photocathode is cesium telluride.

Claim 23. A method as in claim 19 wherein said modulator is a spatial light modulator.

Claim 24. A method as in claim 23 wherein said spatial light modulator is a micromirror array.